

<b>Notice of Allowability</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/667,127	HINSHAW ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Joseph D. Manoskey	2113	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--**  
 All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to Interview on 3/15/06.
2. ☒ The allowed claim(s) is/are 2-21, 23-31, 33-56, 59, 61 and 62.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☐ All    b) ☐ Some\*    c) ☐ None    of the:
    1. ☐ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.  
**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
  5. ☐ CORRECTED DRAWINGS ( as "replacement sheets") must be submitted.
    - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review ( PTO-948) attached
      - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
    - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

- |   |  |
|---|--|
| 1. <input type="checkbox"/> Notice of References Cited (PTO-892)  | 5. <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)                                  |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                | 6. <input checked="" type="checkbox"/> Interview Summary (PTO-413),<br>Paper No./Mail Date <u>20060315</u> . |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08),<br>Paper No./Mail Date _____ | 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment  |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit<br>of Biological Material          | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance                         |
|   | 9. <input type="checkbox"/> Other _____.   |



## **DETAILED ACTION**

### ***Allowable Subject Matter***

1. Claims 2-21, 23-31, 33-56, 59, 61, and 62 are allowed.

### ***Examiner's Amendment***

2. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Mr. David J. Thibodeau, Jr. on 3/15/06 and 3/16/06. The application has been amended as follows:

Please amend claims 2, 3, 5, 13, 19, 20, 21 to be dependent from claim 25.

Please amend claim 9 as follows:

9. (Currently Amended) The disk mirroring apparatus of claim ~~[[47]]~~ 25, wherein the processing unit further comprises:

a mirror manager that manages mirroring of a block of data in the first segment of its disk into ~~[[the]]~~ a secondary data segment of ~~[[the]]~~ a disk of a second processing assembly.



Please amend claim 16 as follows:

16. (Currently Amended) The disk mirroring apparatus of claim ~~[[47]]~~ 25, wherein the secondary data segment of the disk of the second processing assembly is a logical mirror of the first data segment of the disk ~~[[or]]~~ of the first processing assembly.

Please amend claim 17 as follows:

17. (Currently Amended) The disk mirroring apparatus of claim ~~[[47]]~~ 25 further comprising:

a system manager, wherein the system manager controls ~~[[the]]~~ a distribution map so as to evenly distribute data between the disks.

Please amend claim 25 as follows:

25. (Currently Amended) A disk mirroring apparatus comprising two or more processing assemblies each processing assembly further comprising:

A processing unit, further comprising one or more general purpose processors, a memory, one or more disk controllers and a network interface; and

A disk coupled to the processing unit, the storage of the disk being logically divided into at least two data segments, wherein a first data segment of a first disk in a first processing assembly is mirrored by a



secondary data segment of a second disk in a second processing assembly; and wherein the disk mirror apparatus further comprises:  
a spare processing assembly ~~[[is]]~~, activated by a system manager upon detecting failure of the disk or the processing unit of one of the plurality of processing assemblies; and

wherein the system manager creates ~~[[a]]~~ the spare processing assembly by redistributing data stored on the disk of a first processing assembly among the disks of a subset of the plurality of processing assemblies, not including the first processing assembly after which the first processing assembly can serve as the spare processing assembly.

### ***Reasons for Allowance***

3. The following is an examiner's statement of reasons for allowance:
4. Claims 2-21, 23-31, 33-56, 59, 61, and 62 are allowable because the Applicant rewrote the dependent claims that were previously stated as being allowable but objected to as depending upon rejected independent claims.
5. Concerning Claims 2-21, 23-31, the prior art does not teach "the system manager creates the spare processing assembly by redistributing data stored on the disk of a first processing assembly among the disks of a subset of the plurality of



processing assemblies, not including the first assembly, after which the first processing assembly can serve as the spare processing assembly.”

6. Concerning claims 47 and 48, the prior art does not teach “creating a spare disk by redistributing data stored on the first disk among a subset of the plurality of disks.”

7. Concerning claims 33-46, 49-56, the prior art does not teach “modifying, by a system manager, a mirroring topology in case of a topology-affecting event.”

8. Concerning claim 59, the prior art does not teach “responding twice, by the second processing unit, to the broadcasted command, one response involving the data stored on a first segment of the second disk and another response involving the data stored on the secondary segment of the second disk.”

9. Concerning claims 61 and 62, the prior art does not teach “generating a spare disk by redistributing data from a third disk to a subset of the multiple of disks, after which the third disk can serve as the spare disk.”

10. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled “Comments on Statement of Reasons for Allowance.”



**Conclusion**

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph D. Manoskey whose telephone number is (571) 272-3648. The examiner can normally be reached on Mon.-Fri. (7:30am to 4pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Beausoliel can be reached on (571) 272-3645. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JDM  
March 15, 2006

  
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